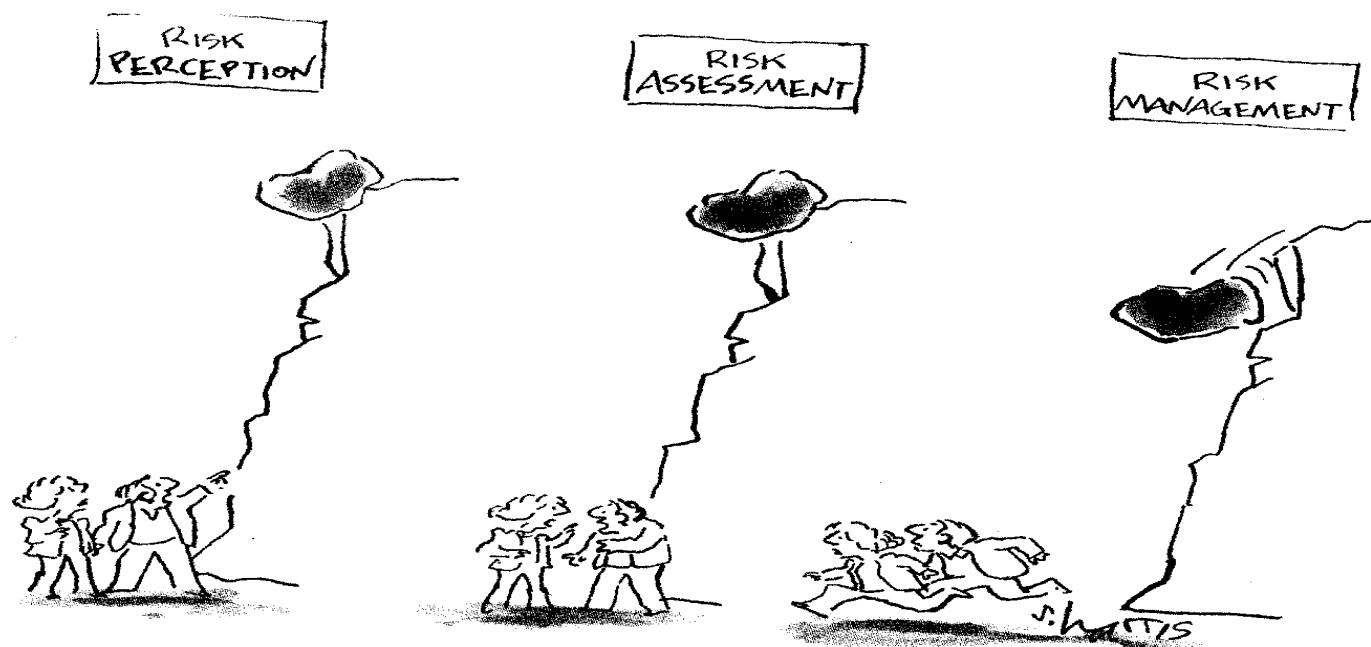


# Operational Risk Management



# References

- MCO 3500.27B Operational Risk Management
- FM 100-14 Risk Management
- OPNAVINST 3500.39B ORM



# ORM Enabling Objectives

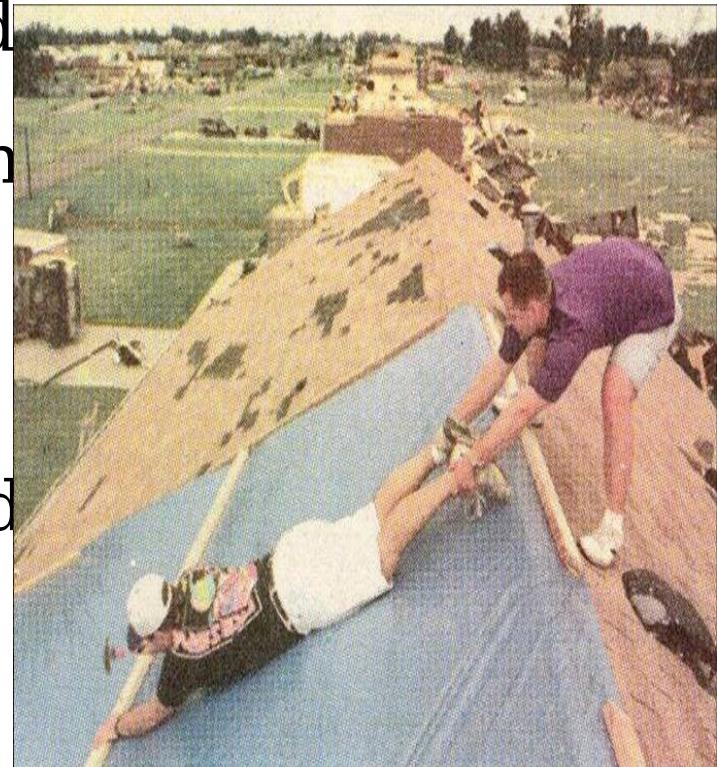
- State the purpose of ORM and how it works
- Be familiar with ORM origin
- State the saving ORM can provide
- Define the critical terms of ORM
- Discuss the 3 levels of application
- Discuss and apply the 5 steps of ORM
- Define risk management
- Define risk assessment
- State the goals of risk management
- State the 4 principles “Golden Rules” of ORM
- Apply the 5 steps of ORM using the risk management worksheet

# Purpose of ORM

- The purpose of ORM can be defined as enhancing hazard identification in the operational environment in order to eliminate risks or reduce them to an acceptable level
- ORM follows a 5 step sequence, with 3 levels of application
- It's a closed-loop process applicable to most operational and organizational situations and environments

# Implementing ORM

- CG MCCDC: Developed curricula and incorporated instruction in each level of leadership training, GMT, and other appropriate classes
- Integrated into ITSs and MCCRE
- Address ORM in appropriate doctrinal publications



Benefits out-way the risk?

# Implementing ORM cont.

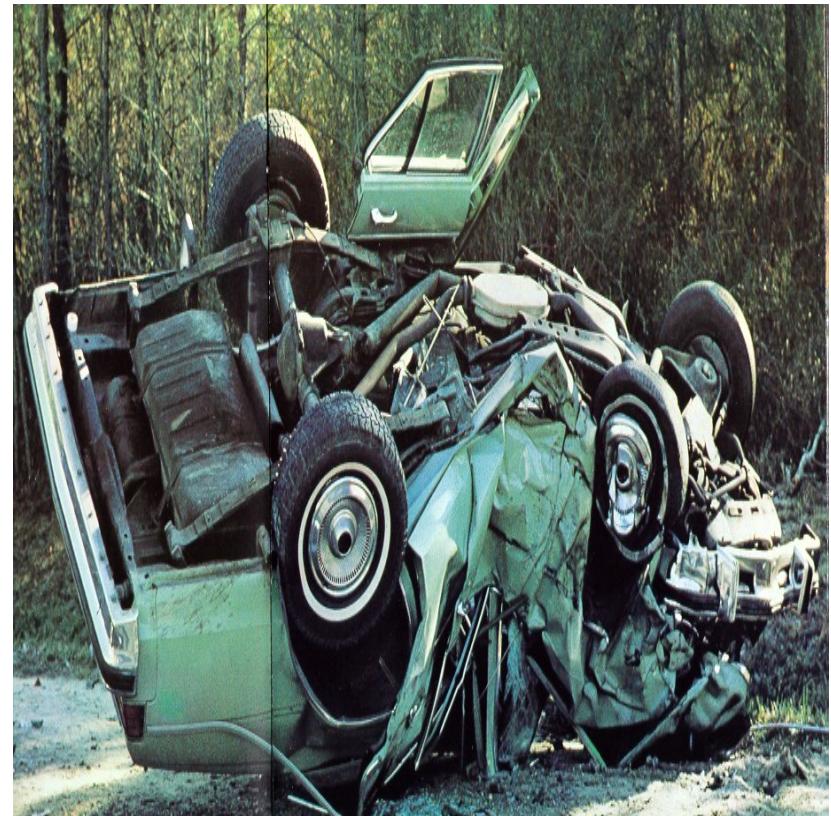
- MEF Commanders
  - Provide ORM into operations, exercises, and training
  - Address ORM in post exercise/operation reports
- Unit Commanders
  - Provide ORM training to personnel
  - Incorporate ORM into briefs/planning



Benefits out-way the risk

# ORM Off Duty

- Applying ORM only on-duty is like putting a band aid on a severed leg!
- Command oversight with involved leadership at all levels and creative intervention CAN and WILL prevent off-duty mishaps



# Basic Hazard Identification Tools

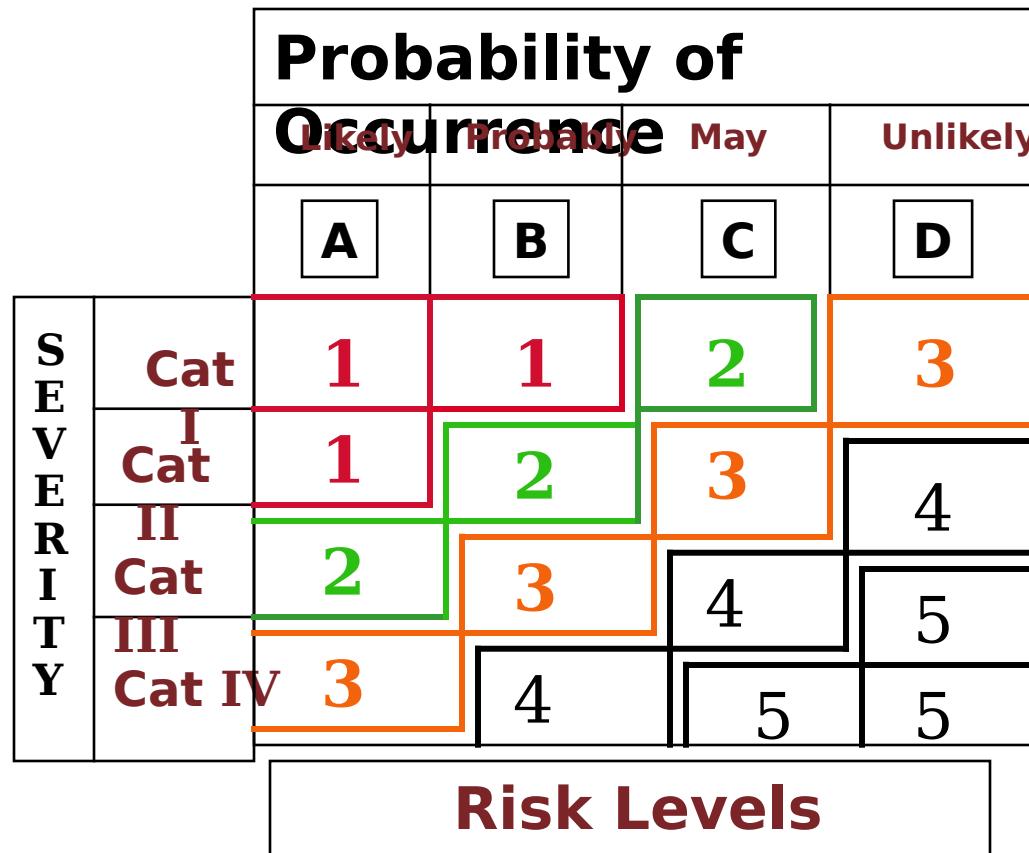
- **Operational analysis tools**
  - Flow charts
  - Data worksheet
  - Risk Assessment Matrix
  - Affinity diagram

# Risk Assessment Matrix

2. Hazard Assessment

## Risk Assessment Code

- 1 = Critical**
- 2 = Serious**
- 3 = Moderate**
- 4 = Minor**
- 5 = Negligible**



# Affinity Diagram

- Technique: A problem or issue is defined into categories to focus patrons “brainstorming” on one aspect of a problem at a time
- Application: Operational Analysis and Preliminary Hazard Analysis
- Methodology:
  - Define the issue
  - Separate the issues into phases/categories

# Affinity Diagram cont.

## **MAINTENANCE**

Parts

Maintenance  
manuals

Interface w/others  
equipment

## **TRAINING**

Key  
personnel

Maintenanc  
e

Testing

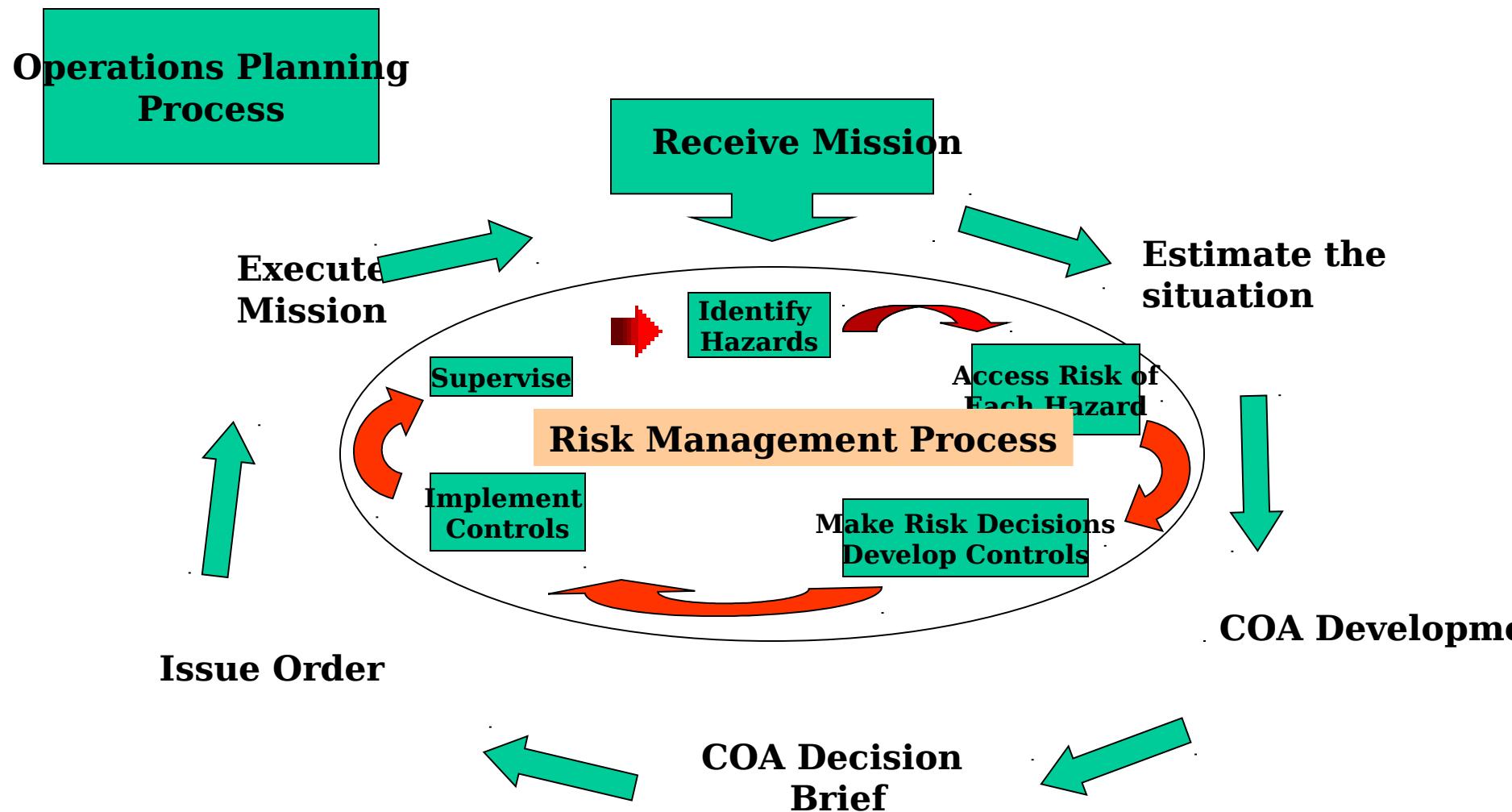
## **OPERATIONS**

Emergency  
procedures

Use of equipment

Tracking of quals

# RISK MANAGEMENT INTERGRATION AND THE MILITARY DECISION MAKING PROCESS



# Origin of ORM

- 1978 Bob Firenze, a Navy civilian wrote an article for the Naval Safety Center's Lifeline magazine identifying Risk Management and its benefits in industrial work place.
- 1991 the Army began working ORM into briefs, schoolhouses and Operational Planning. Since then, ORM has become the Army's primary risk reduction process to protect the force. Their goal Is "to make risk management a routine part of planning and executing operational missions".

# Historical

- What does the absence of ORM cost the Marine Corps?
- FY 99 (when ORM started in the Marine Corp) Marine Corps' total cost for Aviation and Ground Mishaps

**\$330,593,547.0  
0**

# What Mishaps Cost

- TOTAL \$330,593,546
- Per Month \$27,549,462
- Per Week \$6,357,568
- Per Day \$905,735
- Per Hour \$37,739
- Per Minute \$629
- Per Second \$10.50

“ORM supports mission accomplishment and troop welfare”



# Risk Comparison

**TRADITIONAL**

Random, Individual  
Dependent  
Systematic

Common Sense  
Methodical

Uninformed Decision  
Informed

Reactive

**ORM**

Proactive

# Definitions

- **ORM**
  - The process of dealing with risks associated with military operations, which includes risk assessment, risk decision making and implementation of effective risk controls
  - A **tool** used to help leaders make sound decisions in a logical manner in order to manage IDENTIFIED RISKS

# Definitions cont.

- **Active Failures** (2 types)
  - Actions
  - Inactions
- **Latent Failures** (3 types)
  - Organizational Influence
  - Unsafe Supervision
  - Precondition for Unsafe Acts

# Cause Factors

- ***Human Error*** - an individual's actions or performance is different than what is required and results in or contributes to an accident.
- ***Material Failure/Malfunction*** - a fault in the equipment that keeps it from working as designed, therefore causing or contributing to an accident.
- ***Environmental Conditions*** - any natural or manmade surroundings that negatively affect performance of individuals, equipment or materials and causes or contributes to an accident.

# Sources of Human Errors

***Individual Failure*** - Personnel knows and is trained

**to standards but elects not to follow the standard**

***Leader Failure*** - Leader does not (self-discipline). enforce known standard.

***Training Failure*** - Personnel not trained to known standard (insufficient, incorrect or no training on task).

***Standards Failure*** -

Standards/procedures not clear or practical or do not exist

***Support Failure*** - Equipment/material improperly designed to meet performance standards.

# Definitions cont.

- **Probability**
  - The likelihood that a hazardous incident will occur
- **Severity**
  - Expected consequence of an event in terms of degree of injury, illness, property damage, or other mission-impairing factor (loss of combat power)

# Definitions of Probability

**Frequent:** Occurs often in career/equipment service life

**Likely:** Occurs several times in career/equipment service life

**Occasionally:** Occurs sometime in career/equipment service life

**Seldom:** Possible to occur in career/equipment service life

**Unlikely:** Can assume will not occur in career/equipment service life

# Definitions of Severity

**Catastrophic:** Death or permanent total disability, system loss, major property damage

**Critical:** Permanent partial disability, temporary total disability in excess of 3 months, major system damage, significant property damage

**Moderate:** Minor injury, lost workday accident, compensable injury or illness

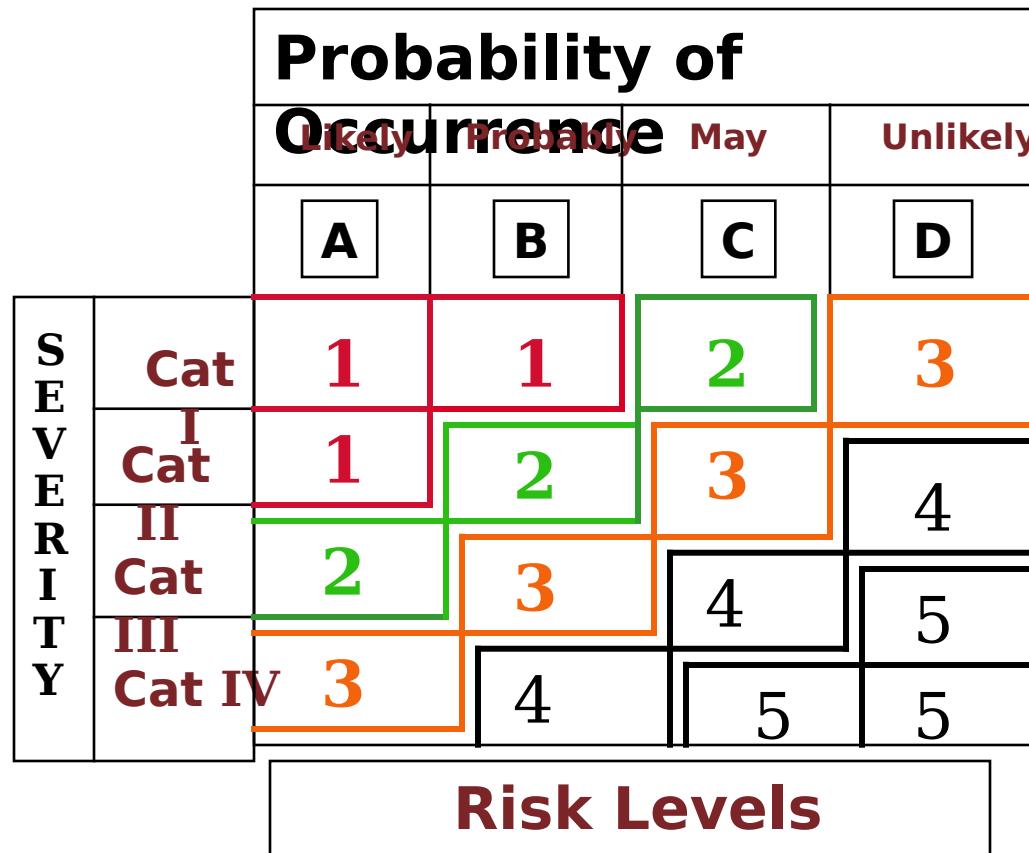
**Negligible:** First Aid or minor supportive medical treatment, minor system

# Risk Assessment Matrix

2. Hazard Assessment

## Risk Assessment Code

- 1 = Critical**
- 2 = Serious**
- 3 = Moderate**
- 4 = Minor**
- 5 = Negligible**



# Definitions cont.

- **Danger**
  - Is a threat to health or safety of humans.  
It is the threat of harm
- **Safe**
  - Absence of danger
- **Safety**
  - The effort to reduce the threat of harm in an intended incident or sequence of events

# Definitions cont.

- **Variance**
  - Deviation and errors that have a negative impact on an evolution
- **Hazard**
  - A condition with the potential to cause personal injury or death, property damage or mission degradation

# Definitions cont.

- **RISK**
  - An expression of possible loss in terms of severity and probability
- **Cause**
  - Something that produces an effect, result, or consequence
  - The person, event, or condition responsible for an action or result

# Definitions cont.

- **Accident**
  - An unplanned incident in which danger, the threat of harm, has actually produced harm
- **Mishap**
  - A somewhat gentle euphemism “collateral damage” for the violence in an accident

# Definitions cont.

- **Risk Assessment**

- The process of detecting hazards and assessing associated risks



A strategy to identify HAZARDS and THREATS and place them in perspective relative to the MISSION or TASK at hand

# ORM Goals

- Ensure mission accomplishment
- Enhance efficiency & effectiveness of all command personnel in the performance of the mission
- Enhance Units force protection



# 4 Principles “ORM Golden Rules”

1. Accept risk when benefits outweigh the costs
2. Accept no unnecessary risk
3. Anticipate and manage risk by planning
4. Make risk decisions at the right level

# ORM 5 Steps & BAMCIS

Parallels the 6 Troop Leading Steps

\* **ORM Steps**

\*

**BAMCIS**

1. Identify Hazards  
Planning

- Begin

Recon

- Arrange

2. Assess Hazards  
Make Recon

-

3. Make Risk/Hazard Decisions  
Complete the Plan

-

# 3 Levels of Application

- **Time Critical**
  - On the run consideration
- **Deliberate**
  - Application of the 5 Step Strategy
- **In-depth**
  - Complete the 5 Step Strategy with detailed analysis, battle plans, joint OPS, etc.

# Risk Management Process

- Does
  - Conserves lives/resources
  - Assist in decision making
  - ID feasible/effective control measures
  - Provide reasonable alternatives

# Risk Management Process

- Does not
  - Inhibit flexibility/initiative
  - Remove risk altogether
  - Require a GO/NO-GO decision
  - Endorse violation of laws
  - Take the place of other control measures i.e. orders, rehearsals

# 5 Steps of ORM

## 1. **Identify Hazards:** by viewing METT-S&L facts of the mission/task

- This is about enemy, terrain, weather, troops, equipment, and time
- Sources of METT-S&L facts and historical hazards include mission/task instructions, recon, experience of leaders and troops, Unit SOPs, Unit's accident history, etc.
- Objective is to identify all risks and hazards that are most likely to result in loss of life, damage to equipment, or

# Step 1 Identify Hazard

- Conduct an Operational Analysis
  - List major steps of the operation
- Conduct a Preliminary Hazard Analysis
  - List the hazards associated with each step
  - List the possible causes of the hazards

# Example of Conduct and Operational Analysis

- List major steps of the operation (Weekend trip to a championship game)
- Operation Analysis
  - Drive to the game
  - Attend the game
  - Drive back home

# Conduct a Preliminary Hazard Analysis

## Hazard

- Motor vehicle mishap

## Hazard

- Car problem

## Hazard

- Flat tire

## Causes

Fatigue

Road hazard

Weather

Night

Speeding

## Cause

Poor maintenance

## Cause

Poor condition of tire

Improper inflation

Road hazard

# Conduct a Preliminary Hazard Analysis

## Hazards

- Out of gas

## Hazards

- Lost

## Hazards

- Late

## Causes

Poor planning

## Causes

Unfamiliar with route

## Causes

Traffic

Construction

Weather

# Conduct a Preliminary Hazard Analysis

## Hazards

- Fight

Alcohol  
Attitude

## Hazards

- Dehydration or Hypothermia

## Causes

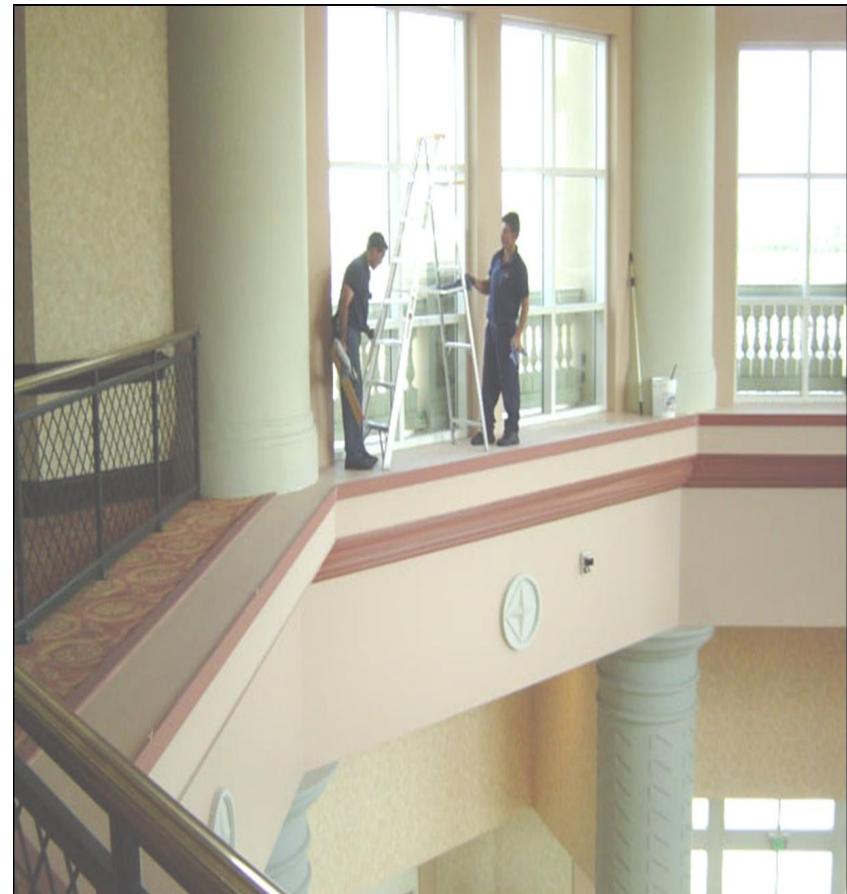
Exposure to heat  
or cold

# 5 Steps of ORM cont.

## 2. Assess hazards

- Determine the risk of each hazard by applying the assessment matrix included in these instructions

- The risks/hazards are identified as Low, Moderate, High, or Extreme-High



Benefits out-way the risk

# Assess Mishap Probability

- Historical data
- Intuitive analysis (brain storming)
- Judgment
- Tool

# Determine the RAC

- Vehicle crashes and kills person
- Fight results in severe injury
- Minor car damage or minor injury from flat tire

Severity + Probability of occurrence=RAC

<b>Severity</b>	<b>Probability</b>	<b>RAC</b>
I	B	1
II	B	2
III	C	4

# 5 Steps of ORM cont.

## 3. Make risk decisions

- For each hazard, develop one or more controls to eliminate or reduce the risk specifying the who, what, when and how of each control
- Determine Mission/Task overall risk: for each hazard use the risk assessment matrix included in these instructions to determine the level of risk remaining after the controls are implemented
- Use procedures outlined in Unit SOPs
  - If the Unit SOP does not have procedures to determine overall mission/task risk, this risk level is the same as the hazard with the highest residual risk

# Step 3: Make Risk Decisions

- **Accept the risk**
- **Avoid the risk**
- **Reduce the risk**
- **Spread the risk**

# Make Risk Decisions

- Develop controls
- Determine residual risk
- Make Risk Decision
- Communicate w/higher authority
  - Risk>Benefit
  - Risk exceed the Commander's stated intent
  - Help is needed to implement controls

# Risk Control Options

- Engineering
  - ✓ New Technology, design, substitute material
- Education
  - ✓ Collective/individual training
- Administrative
  - ✓ Establishing written programs, limiting exposure
- Physical
  - ✓ Barriers, PPE, road guards, warning signs
- Operational

# Develop Controls

- Vehicle mishap
- Lost
- Late
- Car Problems
- Fight w/fan
- Dehydration
- Flat tire
- Out of Gas

# Develop Controls

- Vehicle mishap
- Lost
- Late
- Car problems
- Proper rest, plan route, prep vehicle, leave early, driver training, Don't drink and drive
- Get map of area
- Leave early, plan route
- Op check vehicle

# Develop Controls

- Fight w/fan
- Dehydration or Hypothermia
- Flat tire
- Out of gas
- Avoid confrontation
- Bring proper clothing
- Check tires, drive slower, delay trip, follow route plan
- Op check

# 5 Steps of ORM cont.

## 4. Implement controls

- For each control, enter how the control will be put into effect and/or communicated to personnel who will make it happen.

Example: Verbal orders, SOPs, OPORD, rehearsals

- Engineering Controls
- Administrative Controls
- Personal Protective Equipment

# Implement Controls

- Vehicle mishap
  - Develop SOPs, Policy Letters, Trip plans, Leave request
  - Require possible routes for trips
- Lost
  - Set travel times, verbal orders
  - Create vehicle checklists, make repairs
- Late
- Car problems

# Implement Controls

- Fight w/fan
- Dehydration or Hypothermia
- Flat tire
- Out of gas
- Stay together
- Check each other
- Require vehicle repair, periodic checks, spare tire and equipment
- Put gas in the vehicle

# 5 Steps of ORM cont.

## 5. Supervise and evaluate

- For each control, enter how each control will be monitored to ensure it is implemented, i.e. direct supervision, continuous supervision, spot checks, situation reports, inspections, buddy system, or personal self-discipline
- After the mission/task is completed determine the effectiveness of each control in reducing the risk of the targeted hazard

# Supervise

- Vehicle mishap
  - Direct and continuous
- Lost
  - Direct and continuous, buddy system
- Late
  - Personal self-discipline, buddy system
- Car problems
  - Spot check, inspections

# Supervise

- Fight w/fan
- Dehydration or Hypothermia
- Flat tire
- Out of gas
- Buddy system
- Buddy system, self-discipline
- Spot checks, buddy system, inspections
- Spot checks, buddy system, inspections

# **Supervise - HOW**

- Monitor and Enforce controls
- Use evaluation techniques to look for new hazards
- Examine data/make adjustments that are ineffective
- Evaluate effectiveness of controls and revise if necessary

## Evaluation Tools

- Spot Checks/Back Briefs
- Audits/Inspections
- Readiness Reports
- Licensing
- Rehearsals

# Create Groups

# Risk Management Scenario

- 1. Infantry**
- 2. Armor**
- 3. Aviation**
- 4. Air Defense Artillery**
- 5. Field Artillery**
- 6. Corps of Engineers**
- 7. Transportation**
- 8. Refuel on the move**
- 9. Tactical Road march**
- 10. Live fire**

# LEAVE/LIBERTY OPERATIONAL RISK ASSESSMENT WORKSHEET

ORGANIZATION:	2d Medical Battalion, 2d MLG	SECTION:	S-4
EVENT DESCRIPTION:	Liberty trip to AFC Football Game	EVENT DATE(S):	January 2007
PREPARED BY:	Sgt John C. Smith	DATE:	January 2007

IDENTIFY HAZARDS			ASSESS HAZARDS	MAKE RISK DECISIONS		IMPLEMENT CONTROLS	SUPERVISE
Operational Plan	Hazards	Causes	Initial RAC	Develop Controls	Residual RAC	How to Implement	How to Supervise
Drive to game	Motor Vehicle Mishap	Car problems Construction Bad weather	3 3 2	Op Check auto Plan route Leave early/ prep auto	4 4 3	Make repairs/ travel package Request early liberty add tire chains	Owner/operator "A" Driver Senior Marine request perm
Attend game	Fight Dehydration	Fight w/ fans Hypothermia	2 2	Avoid confrontation Bring warm clothes	3 3	Stay together Check each other for proper clothing	Team effort Team effort
Drive home	Motor Vehicle Mishap  Car problems	Fatigue DUI Bad weather Poor Maintenance	2 2 2 3	Swap drivers Designated Drivers Increase following distance/ prep auto Op check auto	3 3 3 3	Rotate drivers every 2 hours DD's identified prior to departure Get WX reports Designate rest stops auto serviced and inspected	Senior man DD's "A" driver Senior man Owner/operator
Supervisor's Notes:							
Supervisor's Signature:				Date:			

**In preparation for an amphibious exercise, a deck officer uses ORM to plan for launching small boats:**

**a. Step 1 - Identify Hazards**

**Operational Analysis:**

**Muster deck watch section**

**Brief**

**Man launch positions**

**Attach lines and Load boats**

**Move boats over water and lower**

**Detach lines and retrieve**

**Small boats move away from ship**

**Stow lines**

**Muster deck watch section**

**For each step of the operational analysis, list any hazards which might result in personnel injury/death, property damage or mission degradation:**

- **Hazards**
  - **Personnel slips/falls**
  - **Time/position requirements confused**
  - **Boat overloaded**
  - **Improperly attached lines**
  - **Lost control of boats(resulting in death/injury, damage or delay/abort of launch)**
  - **Man overboard**
  - **Lines tangled/knotted**
  - **Small boats unable to break away from the ship**
- **Causes**
  - **Wet deck, gear adrift, rushing**
  - **Incomplete/inaccurate**
  - **Inadequate training, crew complacency**
  - **Same as above**
  - **Material Casualty (davit crane or harness failure) High sea state, improper procedures (winch, davit operation), improper positioning (boat crew and boat)**
  - **Same as above**
  - **Same as above, improperly attached lines**
  - **Small boat engine failure, suction effect from ship**

# **Summary**

**Enhances operational mission accomplishment**

**Supports well-informed decision making to implement a COA.**

**Provides assessment tools to support operations.**

**Improves decision making skills based on a systematic approach..**

# ONLINE SITES

- Safety Division;  
<http://hqinet001.hqmc.usmc.mil/sd/documents.htm>
- Navy Safety Center;  
<http://www.safetycenter.navy.mil/ashore/marines/default.htm>
- Marine Corps ORM site;  
<https://crcapps2.crc.army.mil/ASMIS2/marines/login.aspx?ReturnUrl=%2fASMIS2%2fmarines%2fdefault.aspx>

A photograph of a man performing a handstand on a paved surface. He is wearing a light-colored t-shirt and shorts. Several other people are standing around him, some looking on and others engaged in their own activities. The scene appears to be an outdoor public space.

# Questions?

# Practical Application

Benefits out-way the risk?